I CLAIM:

1. A short-circuit detecting and protecting circuit comprising:

a switching unit for obtaining input signals,

a comparator including a first input terminal coupled to said switching unit, an output terminal, and a second input terminal, and including an internal voltage,

a control transistor coupled between said switching unit and said second input terminal of said comparator, to define input time of the input signals, and

means for detecting a voltage difference between said first and said second input terminal of said comparator,

said comparator comparing the voltage difference between said first and said second input terminal of said comparator and internal voltage of said comparator, to determine a short-circuit or overload situation.

2. The short-circuit detecting and protecting circuit as claimed in claim 1, wherein said switching unit includes a first transistor coupled to said first input terminal of said comparator to obtain one of the input signals, and a second transistor coupled to said control transistor to obtain the other input signal.

3. The short-circuit detecting and protecting circuit as claimed in claim 1, wherein said switching unit is a CMOS having a pMOS and an nMOS.

4. The short-circuit detecting and protecting circuit as claimed in claim 1, wherein said detecting means includes a detecting resistor coupled between said first and said second input terminals of said comparator, to generate and provide two voltage signals to said first and said second input terminals of said comparator

respectively.

5. The short-circuit detecting and protecting circuit as claimed in claim 1 further comprising a divider resistor coupled between said control transistor and said second input terminal of said comparator, to divide the signals.

6. The short-circuit detecting and protecting circuit as claimed in claim 1 further comprising a load resistor coupled to said first input terminal of said comparator and ground.

7. A short-circuit detecting and protecting circuit comprising:

a switching unit including a first and a second switching transistors for obtaining first and second input signals respectively,

a first and a second control transistors coupled to said first and said second switching transistors of said switching unit respectively,

a first and a second comparators each including a first and a second input terminals and an output terminal, said first input terminal of said first comparator being coupled to said first control transistor via a first resistor, said second input terminal of said second comparator being coupled to said second control transistor via a second resistor, and

a first and a second detecting resistors coupled between said first input terminal of said first comparator and said second input terminal of said second comparator, to actuate either said first or said second comparator to output control signals.

8. The short-circuit detecting and protecting circuit as claimed in claim 7, wherein said first switching transistor is a pMOS, and said second switching transistor is an nMOS.

9. The short-circuit detecting and protecting circuit as claimed in claim 7 further comprising an overcurrent control means for

switching off said short-circuit detecting and protecting circuit when receiving said output control signals from either said first or said second comparator.

10. The short-circuit detecting and protecting circuit as claimed in claim 9, wherein said overcurrent control means includes an OR gate coupled between said first and said second comparators.

11. The short-circuit detecting and protecting circuit as claimed in claim 10, wherein said overcurrent control means further includes a first and a second control circuits coupled to said first and said second switching transistors of said switching unit respectively, and coupled to said OR gate.

12. A short-circuit detecting and protecting circuit comprising:

a first detecting circuit including a first and a second input terminals for obtaining first and second input signals respectively,

a second detecting circuit including a first and a second input terminals for obtaining third and fourth input signals respectively, and

a load coupled between said first and said second detecting circuits.

13. The short-circuit detecting and protecting circuit as claimed in claim 12, wherein said first and said second input signals of said first detecting circuit are in phase, and said third and said fourth input signals of said second detecting circuit are in phase.

14. The short-circuit detecting and protecting circuit as claimed in claim 12, wherein either said first or said second input signal of said first detecting circuit is opposite in phase to either said third or said fourth input signal of said second detecting circuit.